REMARKS

At the outset, it is noted that the application includes 53 claims, not 48 claims as indicated in the Office Action Summary.

By this amendment, claims 1 to 23 and 36 to 53 have been cancelled, claim 24 has been amended, and new claims 54 to 57 have been added. Support for the amendment in claim 24 may be found in the specification at, for example, page 12, lines 14 to 18. Support for claims 54, 56, and 57 may be found throughout the specification; see, for example, page 12, lines 14 to 25, and page 17, lines 24 to 27, page 18, lines 3 to 5, page 27, line 10, respectively. Claim 55 parallels original claim 2. Claims 24 to 35 and 54 to 57 are pending in the case.

The amendments do not add new matter and entry thereof is respectfully requested.

Election/Restriction

In view of the finality of the Restriction Requirement, non-elected claims 1 to 23 and 36 to 53 have been cancelled. Applicants reserve the right to prosecute the cancelled claims or related claims in a related application.

Claim Rejections – 35 USC § 103

Claims 24, 25, and 28 to 35 were rejected under 35 USC § 103(a) as obvious over Bentsen et al. (US 6,566,508) in view of Wolfbeis (US 5,238,809). This rejection is respectfully traversed.

As amended herein, claim 24 reads as follows:

A system for detecting presence of an organism having at least one enzyme in a sample, comprising:

a vessel for incubating the sample and at least one substrate such that the at least one enzyme can react with the at least one substrate to produce a biological molecule;

a partitioning element that allows partitioning of either said biological molecule or said at least one substrate thereinto;

an excitation light source that irradiates said biological molecule or said at least one substrate partitioned into said partitioning element;

a detector that detects fluorescence of said biological molecule or said at least one substrate partitioned into said partitioning element; and

a control unit;

wherein said detected fluorescence is indicative of presence of said organism in the sample.

Thus, the system of claim 24 includes a partitioning element into which either the enzyme substrate or the product of the enzyme-substrate reaction, i.e., the biological molecule, is selectively partitioned. This is taught throughout the application; see, for example, page 10, lines 8 to 10.

Bentsen et al. discloses a system for detecting the presence of microorganisms, in which enzymes produced by the microorganisms are allowed to react with at least one substrate to produce a product. According to Bentsen et al., an excitation light source irradiates the product, and a detector is used to detect any subsequent fluorescence from the product, wherein detected fluorescence is indicative of the presence of microorganisms in the sample. As noted by the Examiner, Bentsen et al. does not disclose the use of a partitioning element that allows partitioning of the product thereinto. Therefore, for at least this reason, Bentsen et al. is deficient.

Wolfbeis discloses a system in which the catalytic activity of enzymes is measured through the detection of emitted fluorescence using an optical fiber probe. The Examiner suggested that Wolfbeis teaches, at column 6, lines 42 to 50 and Figure 4:23, that a partitioning element is placed over the optical fiber probe in order to separate desired products from other compounds in the sample solution.

Applicants respectfully disagree. Wolfbeis does not teach a partitioning element into which either the enzyme substrate or the product of the enzyme-substrate reaction is selectively partitioned, according to the invention.

Instead, Wolfbeis teaches an "enzyme permeable membrane" or "protective cap" which defines a reaction chamber containing the optical probe, the enzyme reactant (i.e., the substrate) and the enzyme. Wolfbeis specifically teaches, at column 6, lines 48 to 50, that the reaction chamber should be permeable to the enzyme and it should not permit the enzyme reactant to leave by diffusion. Further, Wolfbeis teaches at column 6, lines 60 to 68, that the enzyme-substrate reaction takes place within the reaction chamber created by the enzyme

permeable membrane. This results in the product of the enzyme-substrate reaction also being inside the reaction chamber.

Further yet, Wolfbeis teaches that the enzyme reactant may be prevented from diffusing out of the membrane by bonding it to a water-soluble or water-swelling polymer, wherein the polymer should be chosen such that its molecules are large enough to prevent escape through the protective cap (see column 6, lines 51 to 60). Therefore, any separation of molecules provided by the enzyme permeable membrane of Wolfbeis is based only on molecule size, which, in turn, is based on pore size of the membrane. However, such separation is merely filtering, wherein molecules smaller than the pore size will pass through the membrane, and molecules larger than the pore size will not pass through the membrane. Such separation is not selective partitioning as taught in the invention.

As a final point, it should be noted that because there is no selective partitioning in Wolfbeis, all three of the enzyme, the substrate, and the product are present in the reaction chamber. In contrast, the partitioning element of the invention provides selective partitioning of either the substrate or the biological molecule thereinto.

For at least these reasons, the enzyme permeable membrane of Wolfbeis is not a partitioning element. As Wolfbeis does not repair the deficiency of Bentsen et al., withdrawal of the rejection and reconsideration are respectfully requested.

The Examiner also rejected claims 25, 28, and 29 to 35 as obvious in view of Bentsen et al. and Wolfbeis, relying on the argument set forth in the rejection of claim 24. Insofar as claim 24 is believed to be patentable over the cited references, it is submitted that the rejections of claims 25, 28, and 29 to 35 are rendered moot. Accordingly, withdrawal of these rejections and reconsideration are respectfully requested.

Claims 26 and 27 were rejected under 35 USC § 103(a) as obvious over Bentsen et al. in view of Wolfbeis as applied to claim 24, and further in view of Lee et al. (US 2003/0222012). The Examiner suggested that it would have been obvious to provide the apparatus disclosed by Bensten et al. and Wolfbeis with a removable cartridge as taught by Lee et al. for containing the sample and partitioning produced biological molecules. This rejection is respectfully traversed.

As discussed above, claim 24 is patentable over Bentsen et al. and Wolfbeis because

the references do not teach or suggest a system for detecting presence of an organism having a partitioning element for partitioning of either a biological molecule or an enzyme substrate thereinto. Claims 26 and 27 are therefore patentable over Bentsen et al. and Wolfbeis in view of Lee et al., because the combination of references does not teach or suggest the claimed invention.

Withdrawal of the rejection and reconsideration are respectfully requested.

In view of the foregoing, it is submitted that claims 24 to 35 and 54 to 57 are in condition for allowance, and confirmation thereof is respectfully requested.

Should the Examiner believe that a personal communication would expedite the prosecution of this application, he is invited to telephone the undersigned at the number provided below.

Respectfully submitted,

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